

MURICEA (CNIDARIA, OCTOCORALLIA) FROM BRAZIL, WITH DESCRIPTION OF A NEW SPECIES

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ABSTRACT

The study of the genus *Muricea* Lamouroux, 1821, occurring off the Brazilian coast showed the presence of three species: *M. atlantica* (Riess in Kükenthal, 1919); *M. midas* Bayer, 1959; and *M. flamma* new species. A fourth was indicated only from the literature: *M. laxa* Verrill, 1864. *M. atlantica* was recorded in several localities off Cape São Tomé (22°S) south to Parcel dos Carpinteiros (32°S). *M. midas* type material, off the Amazon and Suriname coast (02°N and 07°N, respectively), was studied. New material of this species from southern Brazil widened its known distribution by 5,000 km (31°S). *M. flamma* new species was found only on the Abrolhos Bank (approximately 17°-18°S). *M. laxa* was previously reported off Rio de Janeiro (23°S). A key to the four species recorded off the Brazilian coast is provided.

The Atlantic coast of South America, from Trinidad to the River Plate has a "poorly known" octocoral fauna (Bayer, 1981a: 8). The available information is sparse, mostly outdated, and scattered among papers dealing with single species or emphasizing fauna from other areas, though including material from this coast (Bayer, 1981b: 30, and references listed). This inhibits the progress of studies that need information on distribution or identification of species. We have reviewed species of *Muricea* Lamouroux, 1821, as part of a series of studies that will deal with the octocorals from the Amazon River to the River Plate.

There are few records of species of *Muricea* Lamouroux, 1821, off the Brazilian coast. Bayer (1959) described *M. midas*, collected by the OREGON off the Amazon. Tixier-Durivault (1970) recorded *M. atlantica* (Riess in Kükenthal, 1919) and *M. laxa* Verrill, 1864, using material collected by the CALYPSO off Rio de Janeiro. Kammers and Saalfeld (1989) recorded *M. atlantica* off Florianópolis (Santa Catarina State).

Additional material and localities were studied. A new species is here described from the Abrolhos region, the southernmost coral reefs in the Western Atlantic. New records have been added to the previously reported species, extending their known distributions.

MATERIALS AND METHODS

Material from the following collections were studied: Collection of Cnidaria, Museu Nacional, Universidade Federal do Rio de Janeiro, Rio de Janeiro, Brazil (MNRJ); National Museum of Natural History, Smithsonian Institution, Washington, D.C., U.S.A. (USNM); The Natural History Museum (BM), London.

Technical terms used in this paper follow Bayer, Grasshoff and Verseveldt (1983). Abbreviations "PA," "BA," "RJ," "SC," and "RS" refer to Pará, Bahia, Rio de Janeiro, Santa Catarina, and Rio Grande do Sul States, respectively. Details of studied specimens are given according to the following format: COUNTRY: STATE, locality (coordinates), depth, collecting date (collection number, number of specimens); STATE, etc. "ALC" means specimens preserved in 70% ethanol; "DRY" means specimens dried.

KEY TO THE SPECIES OF *MURICEA* from Brazil

- 1a. Calyx sclerites with conspicuous smooth projecting spine; colonies branched in more than one plane; axial sheath with spinose spindles and double stars *Muricea laxa* Verrill, 1864

- 1b. Calyx sclerites without conspicuous smooth projecting spine; colonies almost planiform; axial sheath with tuberculate spindles 2
- 2a. Outer surface of calyx sclerites with strong spines; calyces crowded (almost no surface of free coenenchyme); no sudden change in diameter of branches
Muricea atlantica (Riess in Kükenthal, 1919)
- 2b. Outer surface of calyx sclerites with small densely set spines; calyces sparse (leaving conspicuous surface of free coenenchyme); conspicuous change in diameter between subsequent branches 3
- 3a. Branching lax; polyps concentrated on front of colony; calyces obtuse; coenenchymal spindles up to 2 mm long; anthocodial rods colorless *Muricea midas* Bayer, 1959
- 3b. Branching profuse; polyps equally distributed on all sides of colonies; calyces pointed; coenenchymal spindles up to 4 mm long; anthocodial rods pale yellow
Muricea flamma new species

Genus *Muricea* Lamouroux, 1821

Muricea Lamouroux, 1821, p. 26; Riess, 1929, pp. 383–384; Bayer, 1961, p. 179.

Diagnosis.—Colonies arborescent, usually planiform. Axis with cross-chambered central core. Coenenchyme moderately to very thick, with circle of longitudinal canals surrounding axis. Calyces prominent, shelf-like or tubular, with projecting spindles, longitudinally arranged. Outer coenenchymal and calyx spindles usually with outer or terminal spines. Axial sheath with capstans, spindles, or oval bodies, never purple in color.

Type Species.—*Muricea spicifera* Lamouroux, 1821, by subsequent designation of Milne Edwards and Haime, 1850 (*apud* Bayer, 1961: 179–180).

Muricea atlantica (Riess in Kükenthal, 1919)

Plate Ia–c; Figures 1, 2a

Eumuricea atlantica Riess in Kükenthal, 1919, pp. 907–908; Riess, 1929, pp. 399–401, pl. 8, fig. 4.
Muricea atlantica: Bayer, 1961, pp. 184–186, text-fig. 56, pl. 5, fig. 4 (synonymy).

Material Examined.—BAHAMAS: Nassau, East End of Long Key (MNRJ 1257, 1 DRY). BRAZIL: RJ, off São Tomé (22°19'S, 040°29'W), 75 m, 19 May 1974 (MNRJ 506, 5 DRY), Cabo Frio, Ponta do Oratório (approx. 22°53'S, 042°00'W), 10 m, 29 May 1986 (MNRJ 1352, 1 ALC), Arraial do Cabo, off Ilha de Cabo Frio (approx. 23°00'S, 042°00'W) (MNRJ 659, 1 ALC), Ilhas Maricás (approx. 23°03'S, 043°05'W), 17 Nov. 1987 (MNRJ 1350, 4 ALC), Rio de Janeiro, Ipanema, Laje de Santo Antônio (approx. 23°00'S, 043°12'W), approx. 15 m, 22 Mar. 1987 (MNRJ 1301, 2 ALC); SC, Ilha do Xavier (27°25'S, 048°22'W), 16–18 m, 13 Nov. 1988 (MNRJ 1420-4, 5 DRY), Ilha Mata Fome, (27°25'S, 048°22'W), 16 m, 15 Mar. 1987 (MNRJ 1444-5, 2 ALC), Ilha do Xavier (27°36'S, 048°23'W), 19–20 m, 22 Mar. 1987 (MNRJ 1343, 1446, 3 ALC); RS, Parcel dos Carpinheiros (32°16'05"S, 051°47'40"W), 20 m, 02 May 1986 (MNRJ 1857, 1 DRY).

Diagnosis.—Colonies planiform with dense lateral branching; no sudden change in diameter of branches; calyces crowded (almost no surface of free coenenchyme); calyx sclerites without smooth projecting distal spine, outer surface with strong spines; axial sheath with tuberculate spindles.

Description.—Planiform colonies with lateral branching (Plate Ia); slight decrease in diameter between subsequent branches; recorded colonial sizes: height 80–250 mm, width 60–70 mm, depth 14–40 mm; colonies all white, yellowish or brownish orange when alive, yellowish colonies become lighter and brownish colonies darker when preserved, either dried or in alcohol. Terminal branches 10–104 mm long, 3.5–8.2 mm in diameter (calyces included). Outer coenenchymal sclerites inconspicuous; axial sheath sclerites tuberculate light yellow or colorless spindles, up to 0.52 mm long (Fig. 1h–k). Calyces (Plate Ic) platform-like, with prolonged lower lip, leaving almost no space between them (20–52 calyces/cm on terminal

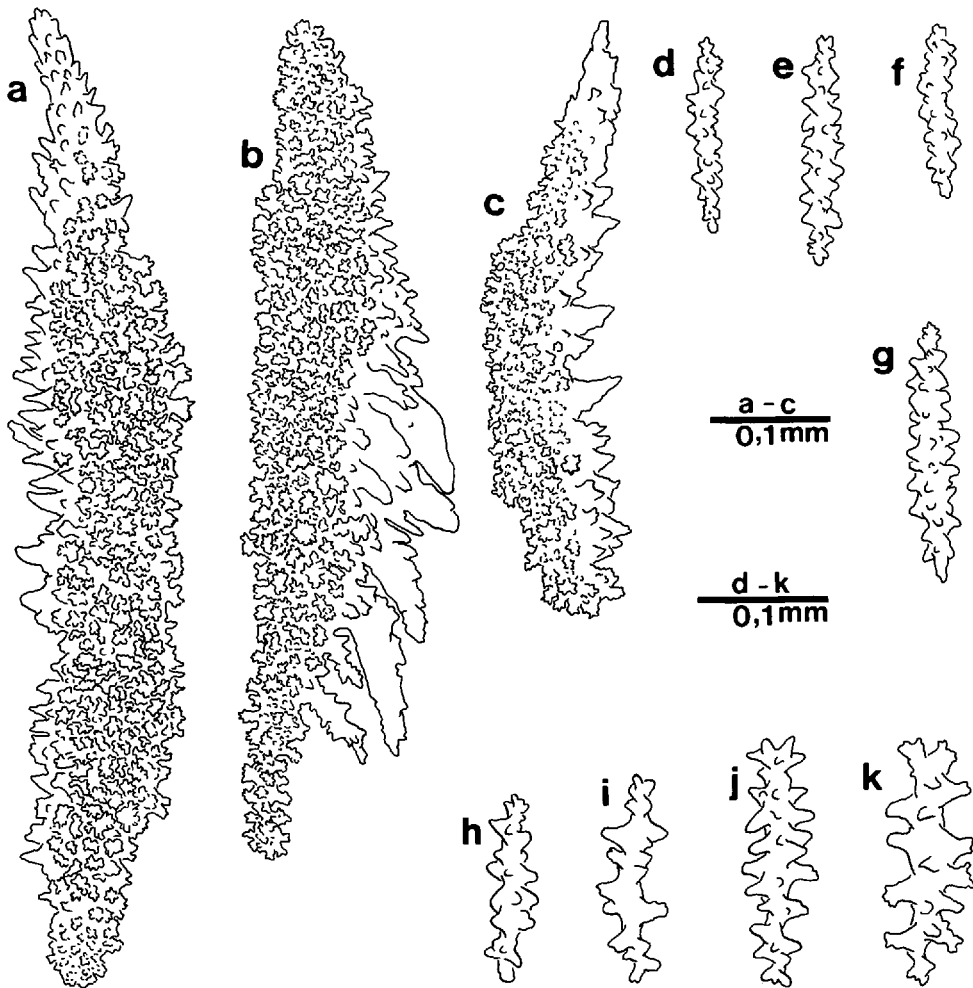


Figure 1. *Muricea atlantica* (Riess in Kükenthal, 1919) (MNRI 1352). Sclerites: a-c, calyx; d-g, anthocodia; h-k, axial sheath.

twigs). Several small calyces between "full-grown" calyces; usually conical. Larger calyx spindles with outer surface usually with prominent spines, inner surface with small close-set tubercles (Fig. 1a-c), pale yellow to white, opaque or translucent; up to 1.57 mm long. Polyps crowded all around stems, distributed in uniform density on all branches, except trunk. Anthocodia on upper (lateral) surface of calyces, not completely retractile even on contracted specimens. Anthocodial armature (Fig. 2a) with distinct points of chevroned sclerites; collaret absent, although lowermost point sclerites may touch each other. Anthocodial sclerites rods with color similar to that of whole colony (Fig. 1d-g).

Type Localities.—Tortugas, Kingston (Kükenthal, 1919: 907).

Distribution.—Bermuda, Bahamas, southern Florida, Antilles (Bayer, 1961: 186), Brazil (Rio de Janeiro, Tixier-Durivault, 1970: 154; Santa Catarina, Kammers and Saalfeld, 1989: 27-29; Rio Grande do Sul) (Fig. 3).

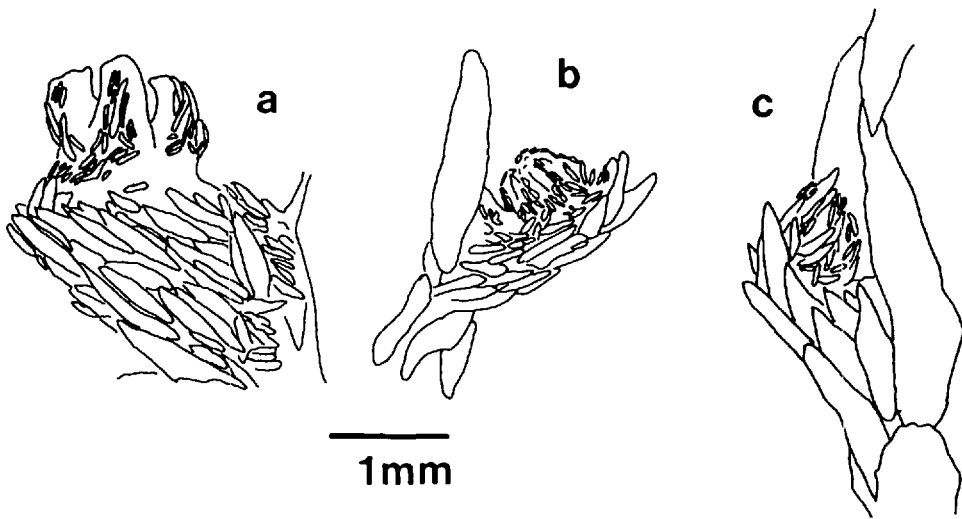


Figure 2. Calyces: a—*Muricea atlantica* (Riess in Kükenthal, 1919) (MNRJ 1446); b—*Muricea midas* Bayer, 1959 (MNRJ 1856); c—*Muricea flamma* n. sp. (MNRJ 1869).

Remarks.—The outer coenenchymal sclerites are not distinguishable between the crowded calyces. Therefore, the largest sclerites on the colonial surface are on the calyx wall, not on the colonial coenenchyme.

The record obtained off Rio Grande do Sul extends the known distribution of *Muricea atlantica* southward by approximately 600 km.

Muricea laxa Verrill, 1864
Plate Ib–d; Figure 4

Muricea laxa Verrill, 1864, p. 36; Bayer, 1961, pp. 188–189 (synonymy and illustrations).

Material Examined.—BAHAMAS: south end of Tongue of the Ocean (23°34'00"N, 076°33'00"W), 66 m, 12 Apr. 1886 (MNRJ 1259, 1 ALC). Specimens from Brazil not represented in the material studied.

Diagnosis.—Colonies with long, flexible, non-pinnate branchlets, branching on different planes (Plate Ib–d); calycular spindles with smooth terminal spike (Fig. 4e–h); axial sheath (Fig. 4l–o) with spinose spindles and octoradiates (after Bayer, 1961, p. 188).

Type Locality.—Florida (Verrill, 1864: 36).

Distribution.—West coast of Florida, Florida Keys, Dry Tortugas, Bahamas, and Antilles (Bayer, 1961: 189); Brazil (Tixier-Durivault, 1970: 155) (Fig. 3).

Remarks.—The identity of Tixier-Durivault's (1970) material from off Rio de Janeiro is uncertain, due to her short characterization and the absence of illustrations. Additional material has not been reported. Therefore, the presence of this species along the Brazilian coast needs further confirmation or the examination of Tixier-Durivault's specimens.

Muricea midas Bayer, 1959
Plate IIa–c; Figures 2b, 5

Muricea midas Bayer, 1959, pp. 12–14, fig. 7.

Material Examined.—SURINAM: east of Paramaribo (07°24'N, 054°35'W), 75–80 fms, 08 Nov. 1958

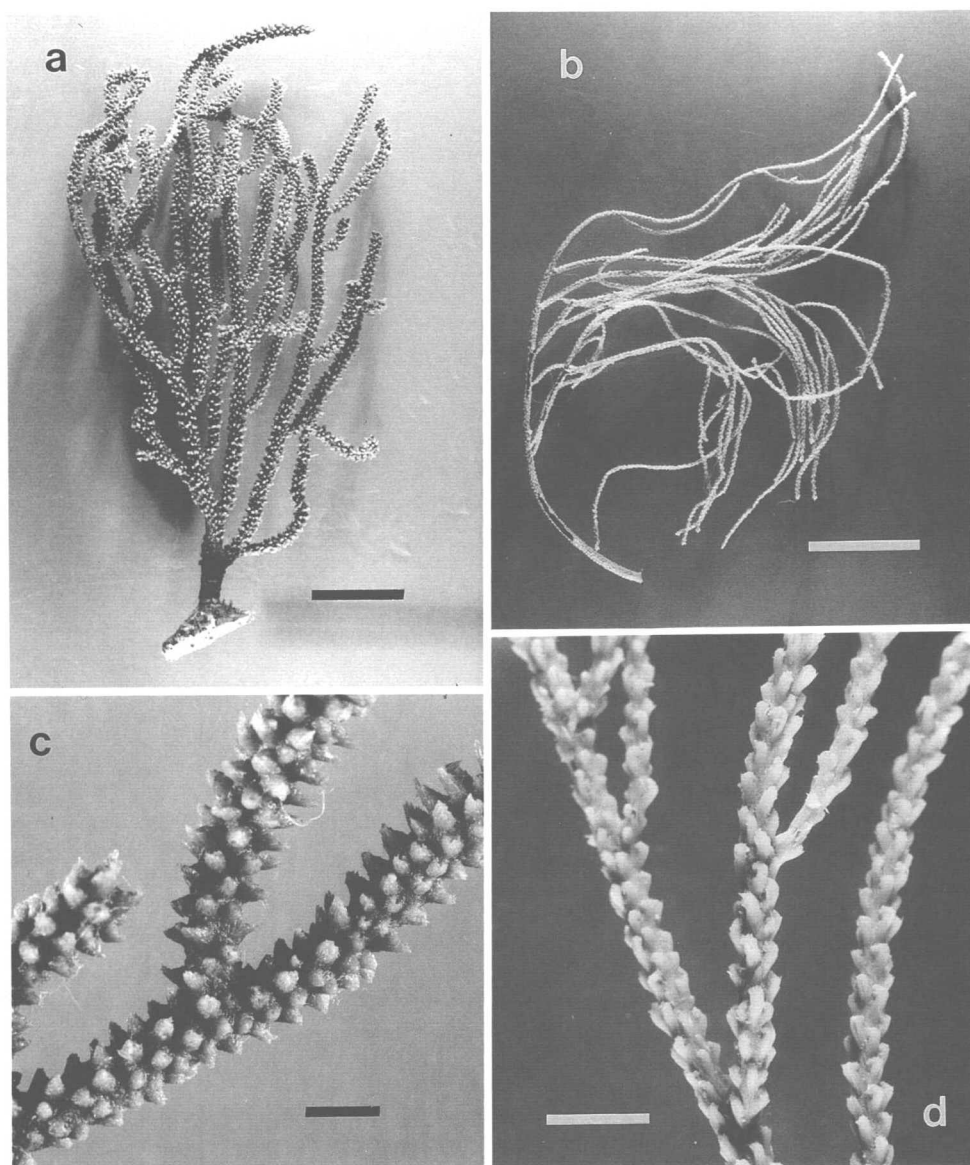


Plate I. *Muricea atlantica* (Riess in Kükenthal, 1919) (MNRJ 1446): a—colony (scale bar = 3 cm), c—branches (scale bar = 5 mm). *Muricea laxa* Verrill, 1864 (MNRJ 1259): b—colony (scale bar = 5 cm), d—branches (scale bar = 5 mm).

(MNRJ 1825, fragment of paratype—ex-USNM 51259, ALC). BRAZIL: PA, off mouth of the Amazon River (02°40'N, 047°55'W), 110 fms, 15 Nov. 1957 (MNRJ 1824, fragment of holotype—ex-USNM 50905, ALC); RS, off Mostardas (31°20'S, 49°50'W), 21 Nov. 1988 (MNRJ 1856, 1 ALC).

Diagnosis.—Colonies with lax lateral branching, mostly in single plane; diameter of branches decreases conspicuously between subsequent branches; polyps concentrated on front of colony; calyces sparse (leaving conspicuous surface of free coenenchyme), obtuse; calyx sclerites without conspicuous smooth projecting

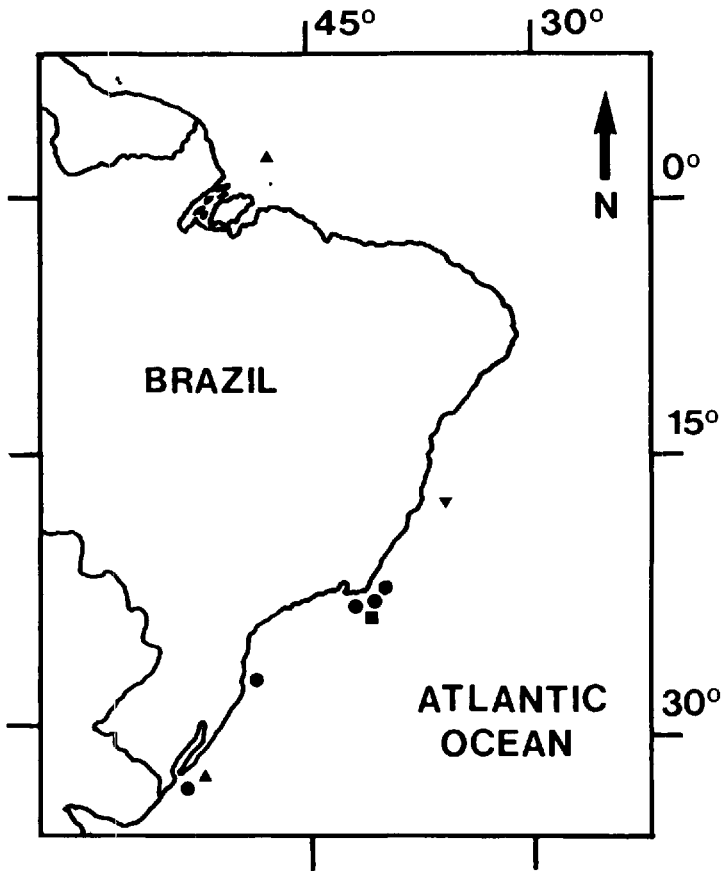


Figure 3. Distribution of *Muricea* off Brazil: ● *Muricea atlantica* (Riess in Kükenthal, 1919); ■ *Muricea laxa* Verrill, 1864; ▲ *Muricea midas* Bayer, 1959; ▼ *Muricea flamma* n. sp.

spine, outer surface with small densely set spines; coenenchymal spindles up to 2 mm long; axial sheath with tuberculate spindles; anthocodial rods colorless.

Description.—Colony laterally branched, mostly in one plane (Plate IIa–b); small variation in diameter between subsequent branches. Colony size: height 78 mm, width 84 mm, depth 30 mm, trunk diameter 4.4 mm, diameter of the spreading base 21.3 mm. Colony light golden yellow when preserved in alcohol. Axis horny longitudinally striated, woody, with eccentric hollow core, brown with terminal twigs light brown. Trunk diameter 5 mm. Terminal branches slender (1.0–1.4 mm in diameter; 2.6–3.0 mm calyces included), usually ascending, 14 to 26 mm long. Coenenchymal cortex sclerites in single layer, with two basic forms: large, thick, blunt, gold yellow spindles, with outer surface covered with small spines and inner covered with densely set small tubercles, up to 2.75 mm (Fig. 5h–j); and smaller thinner spindles (Fig. 5e–g). Axial sheath with small, pale yellow, almost colorless, tuberculate spindles, 0.1 to 0.3 mm long (Fig. 5n–p). Calyces short and obtuse (Plate IIc). Calyx walls formed by approximately three irregular series of sclerites, more distal the smaller, with similar sizes within each series. “Hinge effect” where two consecutive series meet. Calyx sclerites of same color as coenenchymal cortex sclerites, but present lighter hue closer to distal margin, up to

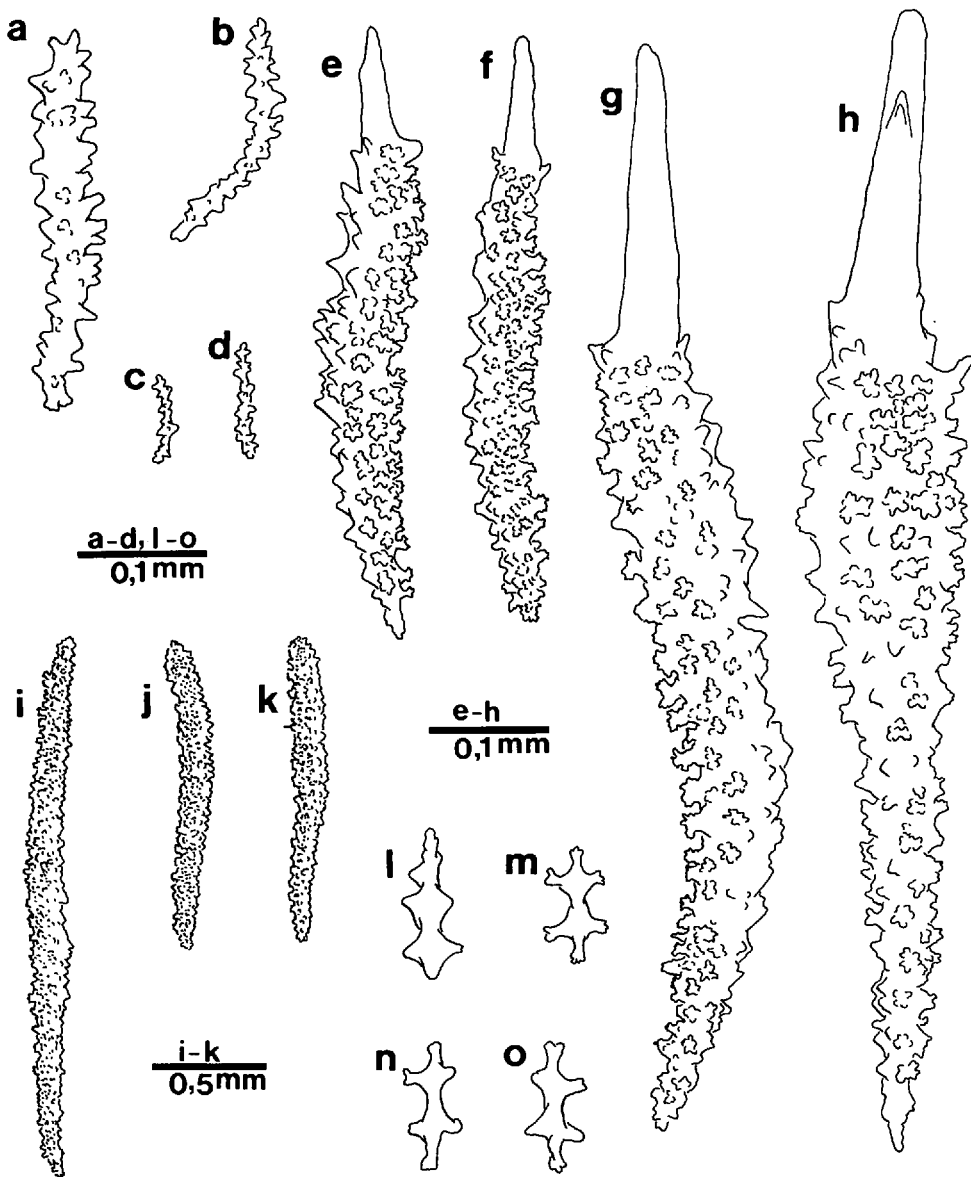


Figure 4. *Muricea laxa* Verrill, 1864 (MNRJ 1259). Sclerites: a-d, anthocodia; e-h, calyx; i-k, cortex of coenenchyme; l-o, axial sheath.

1 mm long. Sculpture similar to larger coenenchymal cortex sclerites, without any projecting smooth spine (Fig. 5k-m). Polyps placed mainly on single face of the colony (front, Plate IIa), 10-11 calyces/cm of terminal branches. Trunk does not bear calyces before it branches. Anthocodial armature (Fig. 2b) with chevroned sclerites in conspicuous points and no collaret, formed by slender, rounded and straight or flattened and bent, colorless rods, up to 0.2 mm long (Fig. 5a-d).

Type Locality.—Off mouth of the Amazon River (Bayer, 1959: 13).

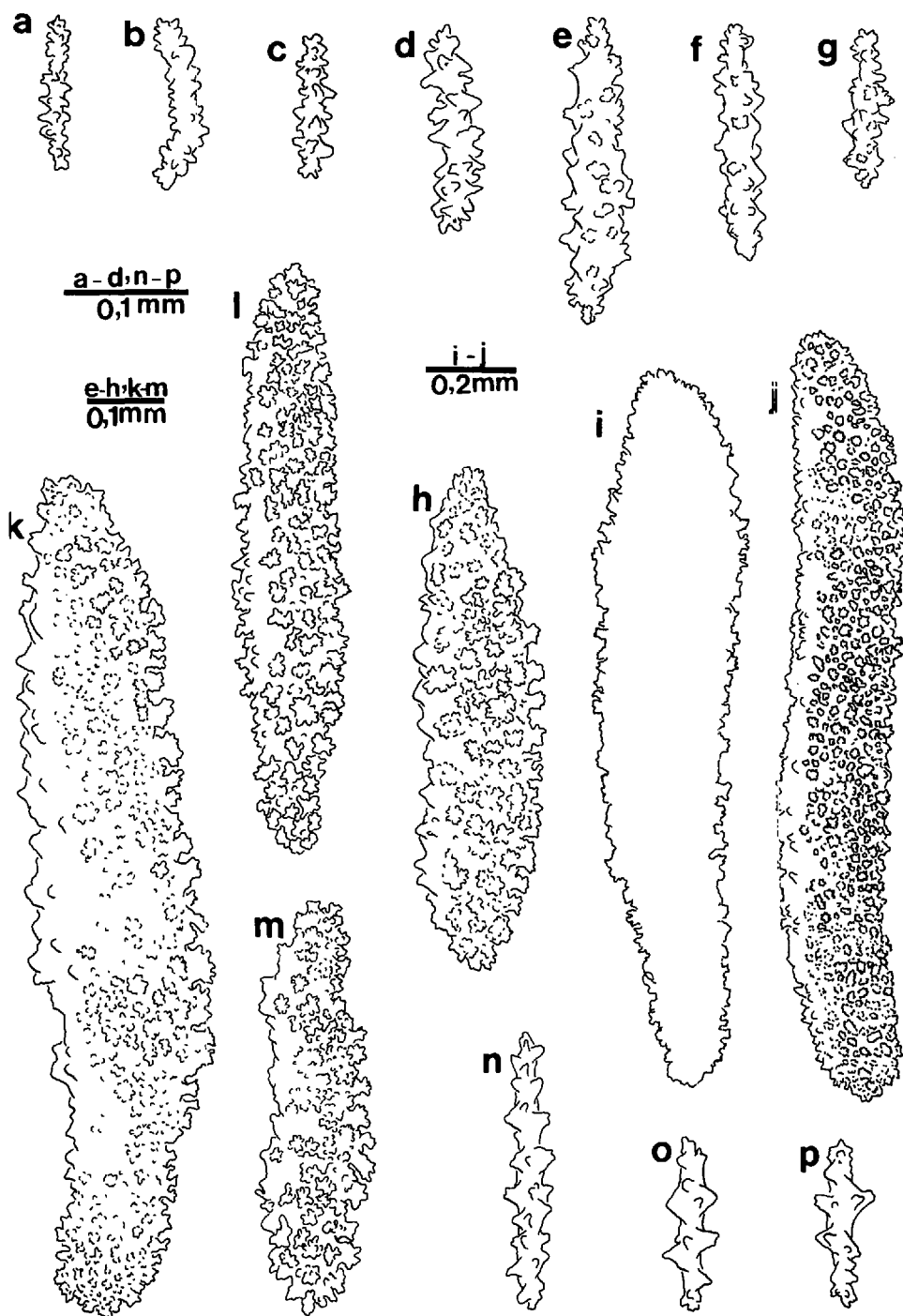


Figure 5. *Muricea midas* Bayer, 1959 (MNRJ 1856). Sclerites: a-d, anthocodia; e-j, cortex of coenenchyme; k-m, calyx; n-p, axial sheath.

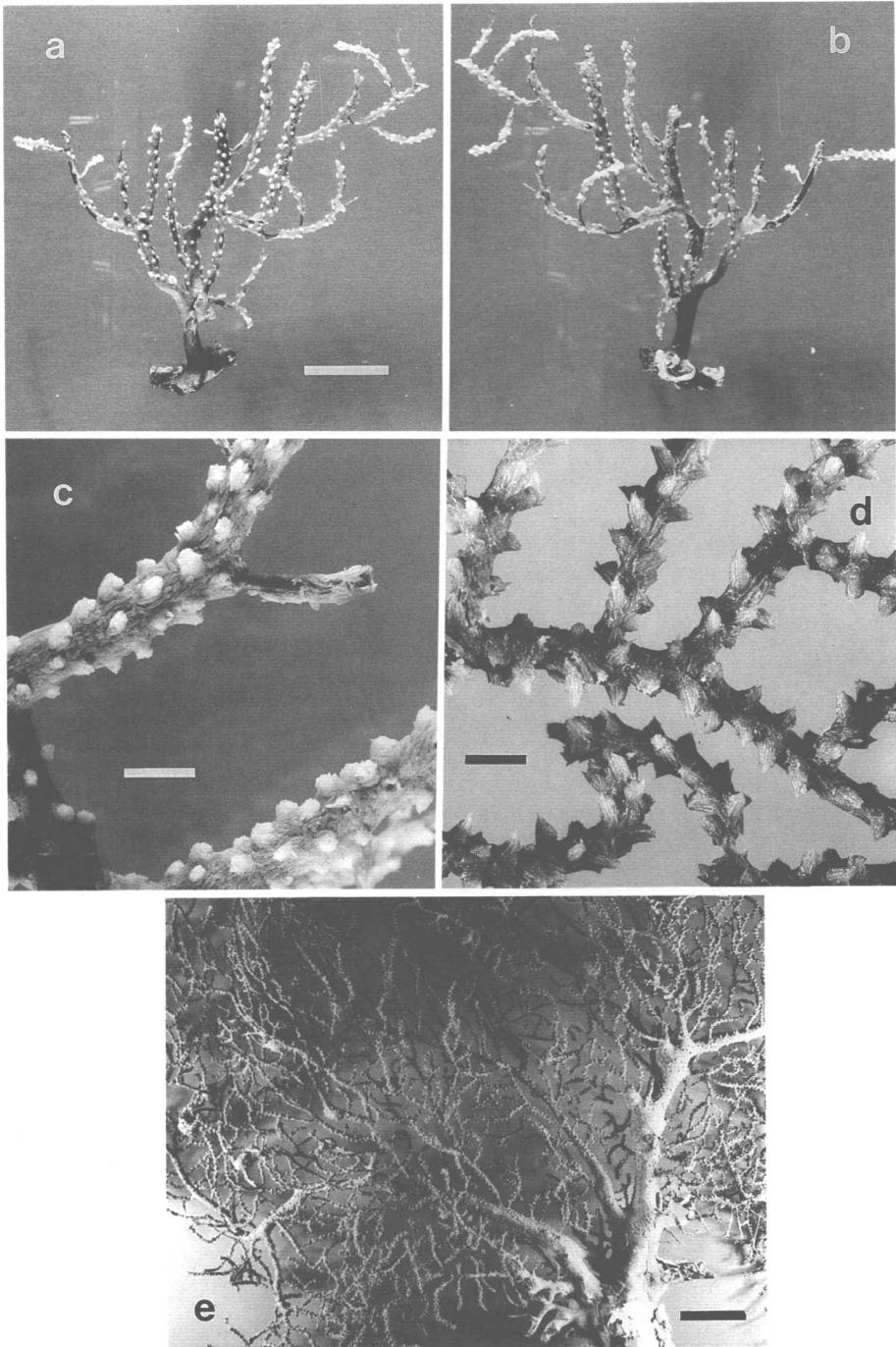


Plate II. *Muricea midas* Bayer, 1959 (MNRJ 1856): a—front of colony (scale bar = 2 cm), b—back of colony (scale = a), c—branches (scale bar = 3 mm). *Muricea flamma* n. sp. (MNRJ 1869—holotype): d—branches (scale bar = 3 mm), e—colony (scale bar = 3 cm).

Distribution.—Surinam, Brazil (off mouth of the Amazon River, PA, Bayer, 1959: 13; off Mostardas, RS) (Fig. 3).

Remarks.—The new record from southern Brazil extends the known distribution of this species southwards by 5,000 km. However, the characteristics of this material are extremely close to those of northern South American specimens.

***Muricea flamma* new species**
Plate IId–e; Figures 2c, 6

Material Examined.—Holotype—BRAZIL: BA, off Caravelas, Parcel das Paredes, Recifes da Pedra Grande (approx. 17°45'S, 038°55'W), 12–16 m, 23 Jan. 1991 (MNRJ 1869-ALC). Paratypes—BRAZIL: BA, Alto de Cumuruxatiba (approx. 17°00'S, 039°05'W), 15–20 m, 30 Jan. 1991 (MNRJ 1836-1 colony, USNM 89264-2 colonies; BM 1992.4.9.1, 2 colonies; ALC); 6 miles off Prado, Buraco do Bicho (approx. 17°20'S, 039°05'W), down to 16 m, 20 Feb. 1988 (MNRJ 1384, 1 DRY); off Caravelas, Parcel das Paredes, Recifes da Pedra Grande (approx. 17°45'S, 038°55'W), 12–16 m, 23 Jan. 1991 (MNRJ 1835, 2 colonies; USNM 89263, 1 colony; 2 ALC + 1 DRY); Banco dos Abrolhos (18°27.4'S, 037°49.4'W), 77 m [actually probably less than 50 m] (MNRJ 878, 1 ALC).

Diagnosis.—Colonies planiform, branching profuse, lateral on larger branches, pinnate on smaller; polyps equally distributed on all sides of colonies; calyces sparse (leaving conspicuous surface of free coenenchyme), pointed; calyx sclerites without conspicuous smooth projecting spine, with small spines on outer surface; coenenchymal spindles up to 4 mm long; axial sheath with tuberculate spindles; anthocodial rods pale yellow.

Description.—Planiform colonies, lateral branching on conspicuous trunk (up to 39 mm in diameter) and larger branches, pinnate on smaller or terminal twigs (Plate IId); sudden variation in diameter between subsequent branches; colonial sizes: height 90–390 mm, width 47–680 mm, depth 3.5–74 mm, spreading basis 9.2–50 mm (holotype: height 320 mm; width 500 mm, depth 45 mm); colonies reddish brown when preserved, lighter on dried than on alcohol preserved specimens. Axis horny wooden-looking, dark brown (except close to distal ends of terminal twigs where they become light brown); larger branches transversely flattened in relation to colonial plane, presenting eccentric hollow core. Terminal branches thin (0.8–2.0 mm in diameter; 2.5–4 mm calyces included), usually ascending, short (10–35 mm long). Cortex of coenenchyme with large, thick, straight or curved, reddish brown spindles, with uniform ornamentation of densely distributed small tubercles or with outer surface with small spines on outer surface and tubercles on others, up to 4 mm long (Fig. 6s–u), and with smaller (approx. 0.3 mm long), more uniformly ornamented, pale spindles (Fig. 6q–r). Axial sheath with small, thin, sometimes slightly flattened yellowish-reddish spindles (Fig. 6h–m). Calyces short, little prominent, almost at right angle to branch/coenenchyme, tapering distally (Plate IId). Calyx sclerites large reddish orange spindles, ornamented like coenenchymal spindles; no projecting smooth spike (Fig. 6n–p); several smaller spindles, similar to smaller sclerites of coenenchyme. Larger calyx sclerites smaller than corresponding coenenchymal sclerites. Polyps uniformly distributed on both faces of colonies (11–25 calyces/cm), closer to each other on terminal and sparser on larger branches. Anthocodia on upper (lateral) surface of calyces, not completely retractile even on contracted specimens. Anthocodial armature with points and without distinct collaret (Fig. 2c). Anthocodial rods light yellow (Fig. 6a–g).

Type Locality.—Pedra Grande, Parcel das Paredes, off Caravelas, Bahia, Brazil, 16–18 m.

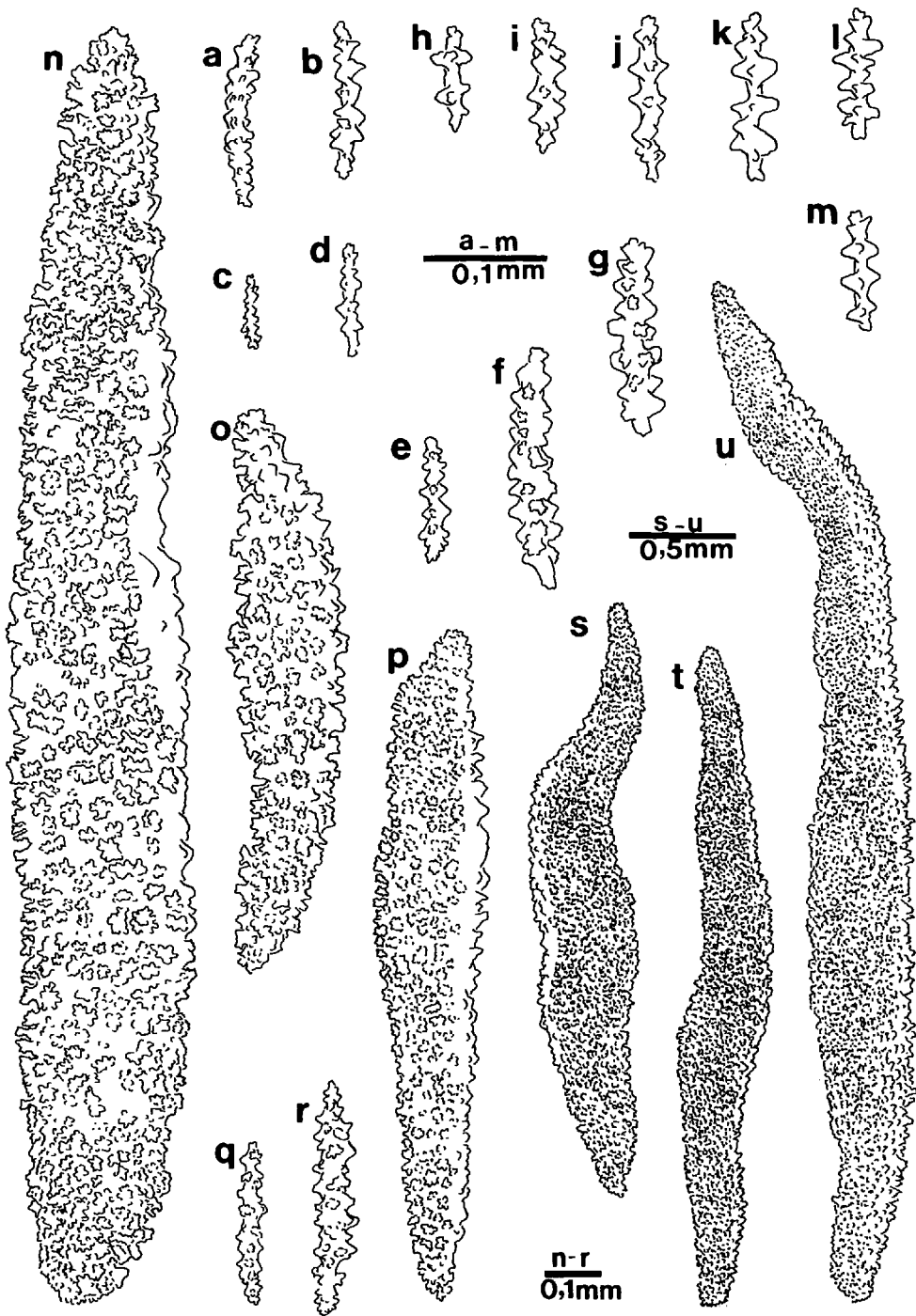


Figure 6. *Muricea flamma* n. sp. (MNRJ 1869-holotype). Sclerites: a-d, anthocodia (from terminal branchlet); e-g, anthocodia (from trunk); h-j, axial sheath (from terminal branchlet); k-m, axial sheath (from trunk); n-r, calyx; s-u, cortex of coenenchyme.

Distribution.—Reported only in the vicinity of the Abrolhos Bank, Brazil (Fig. 3).

Etymology.—Specific name refers to the appearance of live colonies; from the latin *flamma*, blaze, fire, used as a noun in apposition.

Remarks.—The description of this large new species from the Abrolhos region, taken together with a recent description of another large plexaurid from the same area (Castro, 1989), shows how poor our knowledge of its fauna is. Further and more detailed studies off the Brazilian coast are necessary to evaluate correctly its distribution.

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